10:45

705-2 Arterial Myocardial Revascularization Without Cardiopulmonary Bypass. Early Angiographic Evaluation

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Higher patency rate of mammary artery grafts compared to vein grafts in coronary bypass surgery led to an increase use of arterial grafting. However, cardiopulmonary bypass and cardioplegia are associated with some potential morbidity.

From January 1994 to July 1995, 38 patients (62 ± 9 years) underwent coronary bypass surgery without the support of cardiopulmonary bypass, on a beating heart. All the patients underwent grafting of the Left Anterior Descending Artery (and its diagonal branch in 8 cases) with a pedicled left internal mammary artery (LIMA). In 8 of these patients, the gastroepiploic artery (GEA) was also anastomosed to the right coronary artery.

There was no perioperative mortality or myocardial infarction. None of the patients had recurrence of angina pectoris or signs of ischemia during stress test in their follow-up. Early post-operative angiographic evaluation (± 9 days post-surgery) was performed in 25 of these patients (66%) and among them, in 6 of the 8 patients who received both LIMA and GEA grafts. All grafts were patent, without significant stenosis. Quantitative angiography at baseline after Isosorbide Dinitrate was performed in 17 LIMA and in 4 GEA grafts. Mean graft diameters were:

	Baseline	Nitrates	
LIMA	2.76 ± 0.35 mm	2.87 ± 0.38 mm	(+15%) $p < 0.01$
GEA	2.06 ± 0.65 mm	2.33 ± 0.59 mm	(+6%) $p < 0.05$

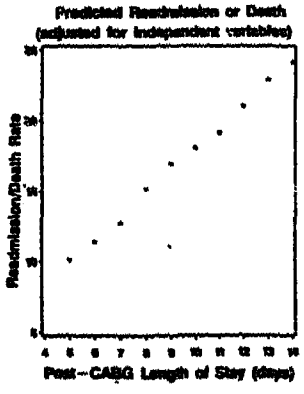
In conclusion, in this selected group of patients, coronary artery revascularization with arterial grafts performed without cardiopulmonary bypass, seems to be a safe procedure and does not adversely affect early patency rate. More experience is needed to evaluate the clinical utility of this procedure.

11:00

705-3 Early Discharge Following Coronary Artery Bypass Surgery Does Not Increase Readmission Rates or Death

Patricia A. Cowper, Eric D. Peterson, Elizabeth R. DeLong, James G. Jollis, Lawrence H. Muhlbaier, Daniel B. Mark. *Duke University Medical Center, Durham, NC*

Providers are under increasing pressure to shorten hospital stays: whether this adversely affects patient outcomes is unknown. We examined the relationship between post-procedure length of stay (PLOS) after coronary artery bypass surgery (CABG) and adverse outcomes (readmission or death within 60 days of discharge). Using national Medicare data, we analyzed outcomes for 84,573 CABG patients discharged alive between January and October 1992 with PLOS indicating routine hospital course (i.e. between 5 and 14 days, 90% of live discharges). Mean age was 72 (± 5) years, with 94% white and 68% male. Rate of readmission or death within 60 days of discharge was positively associated with PLOS, increasing from 13% for 5 days to 32% for 14 days. Logistic regression was used to estimate the probability of readmission or death after adjusting for severity of illness (age, female gender, AMI and comorbid illnesses). The adjusted risk of death or readmission for a prototypical patient (72 year old white male; no comorbidities) ranged from 10% to 24% as a function of PLOS (figure).



Conclusions: Early hospital discharge following CABG does not increase subsequent readmissions or death. Thus, physicians have been able to successfully target low risk patients for early discharge.

11:15

705-4 Cost Reduction in Cardiac Surgery: Results From the Duke Coronary Artery Bypass Grafting Care Map

Scott H. Johnson, L. Richard Smith, Eric Eisenstein, Donald D. Glower, James E. Lowe, Peter K. Smith. *Duke University, Durham, NC*

The effect of a comprehensive perioperative care plan (care map) on patient care and cost was examined in patients undergoing coronary artery bypass grafting (CABG) at Duke University Medical Center. The care map started on February 1, 1994 and included an extubation protocol, consolidation of physician orders, diagnostic tests, medication, patient education, progressive rehabilitation and early discharge. This investigation studied 1268 consecutive patients divided into the pre-care map (n = 404) and post-care map (n = 864) groups. Cost was calculated by multiplying hospital charges by the Medicare cost/charge ratio for each department used in determining federal reimbursement. Both patient groups were similar in regard to their age, sex, ejection fraction, extent of coronary artery disease and prevalence of cardiac risk factors (p = NS). The post-care map group experienced a significant reduction in intensive care unit (ICU) length of stay from 2.6 to 2.0 days ($p < 0.001$) and in total length of stay from 8.4 to 7.2 days ($p < 0.0001$). Discharge by postoperative day number 5 increased in the post-care map group from 15% to 41% ($p < 0.0001$). Mean hospital cost decreased $1800 ($p < 0.0001$) per patient and this resulted in a total cost savings of more than $1,500,000 in the post-care map group. There were no significant differences in postoperative morbidity or mortality. Multivariable analysis identified the following variables as independent predictors of decreased length of stay ($p < 0.05$): use of the care map, younger age, no prior CABG, male sex, higher ejection fraction and no prior angioplasty. The Duke Coronary Artery Bypass Grafting Care Map significantly reduced ICU and hospital stay as well as cost while maintaining the overall quality of patient care.

11:30

705-5 Determinants of the Key Decision for Prior CABG Patients Facing Need for Repeat Revascularization: PTCA or CABG?

Sorin J. Brener, Stephen G. Ellis, Dawn M. Dykstra, Eric J. Topol, Floyd D. Loop. *Cleveland Clinic Foundation, Cleveland OH*

Randomized trials have confirmed that, in the short term, CABG and PTCA are comparable strategies for initial revascularization in selected patients with multivessel disease. However, it is not known what is the optimal strategy in patients with recurrent ischemia following a first CABG and what determines the selection of the repeat revascularization procedure (RR). We reviewed the records of 793 consecutive patients undergoing PTCA and 870 consecutive patients undergoing CABG, as their RR, between 1/92 and 12/94, who did not have additional procedures since the initial CABG. A 1–6 jeopardy score (JS) was assigned to each patient, based on the number of ungrafted native or graft conduits with ≥ 60% stenosis and the relative size of the territory supplied.

	Age (yr)	Female Gender	JS	Patent IMA to LAD	# Patent grafts	Valve disease	EF ≤ 30
PTCA	65 ± 9	23%	1.9 ± 0.9	55%	1.6 ± 0.5	3%	28%
CABG	64 ± 8	15%	3.6 ± 1.3	41%	1.0 ± 0.3	11%	40%
p value	0.18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

By multivariate logistic regression, higher JS was the most powerful predictor of CABG as RR ($c^2 = 231$, OR = 3.77, $p = 0.0001$, for each 1 grade increase). The number of patent grafts ($c^2 = 27$, OR = 0.6, $p = 0.0001$, for each open graft) and a patent IMA to LAD ($c^2 = 9$, OR = 0.6, $p = 0.002$) were inversely associated with CABG as RR. Thus, the decision of CABG vs. PTCA for repeat revascularization is largely predicted by higher jeopardy score, and significant valvular disease, lack of patent IMA to LAD and fewer patent grafts also contribute.

11:45

705-6 Factors Affecting Patency of 3682 Aorto-Coronary Vein Grafts up to 20 Years After Operation

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To determine which factors affect long-term graft patency, we analyzed the results of 5008 graft evaluations in 1847 pts with 3682 grafts. Mean age at surgery was 55 ± 8.8 yrs; 1484 pts (80.3%) were male. Median no. of grafts/pts was 2.0 (1–4). Overall graft patency by year was:

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